

1965 Report on Study of Resistance
in Eastern White Pine to White Pine Weevil
Attack in New York

by

Donald P. Connola, Sr. Scientist, Entomology
New York State Museum & Science Service

This study is in cooperation with the New York State Conservation Department and was initiated in 1964 when non-weeviled, natural re-generated seedlings 4 to 6 feet tall were taken from 2 sources in New York and potted in 5 gallon pails. One source was the Oneonta area (southern New York) and the other was the Warrensburg area (northern New York). Trees indigenous to the Oneonta area are heavily weeviled as compared to sparse weeviling in the Warrensburg area.

The potted trees were placed in four 24' x 24' x 8' cages at the New York State Conservation Department Saratoga Nursery and exposed to 160 weevils liberated in each cage early in May. There were 32 trees in each cage, 16 from each source, spaced four feet apart. Although source of trees in relation to weevil resistance was considered the paramount factor in the study, height of trees, diameter of leaders, length of leaders and water balance in the plants were also studied in relation to weeviling.

Results of the 1964 tests showed that 50 per cent of the trees became weeviled. Of the weeviled trees, 80 per cent were from the Oneonta source. Also, daily weevil counts on the trees during the period of weevil attack showed that 80 per cent of the weevils were on the Oneonta trees. The data also showed more weeviling among trees from both sources which were kept water deficient. Data analyzed from common tree dimensions are listed as follows:

M BPT
ARK

<u>Dimension Factor</u>	<u>Per cent Weeviling Warrensburg</u>	<u>Per cent Weeviling Oneonta</u>
Leader diam.	25	64
Leader length	19	78
Tree height	14	77

The 1965 experiment was a repetition of the 1964 tests. However, it was a failure in regard to weeviling because of DDT contamination. Nevertheless, study was concentrated on growth and metabolism in trees from both sources. The studies showed that the Oneonta trees utilized one third more water than the Warrensburg trees during May and June. Also, the Oneonta trees became water deficient twice as often as the Warrensburg trees. The Oneonta trees put on more growth than the Warrensburg trees. Two growth measurements were made in August. Both were elongation measurements; one on the leader and the other on four laterals of each tree.

Since the trees from both sources were potted in their native soil, growth from both sources were compared as follows:

<u>Tree Treatment</u>	<u>Warrensburg Growth Ratios</u>	<u>Oneonta</u>
	<u>W:O Leaders</u>	<u>W:O Laterals</u>
1) None (caged trees)*	1:3	1:2
2) 10 cc - 12:12:12 fertilizer + plastic cover* (non-caged trees)	1:3	1:3
3) 10 cc - 12:12:12 fertilizer + no plastic cover* (non-caged trees)	2:3	2:3
4) Bare root outplanting at nursery (Weeviled trees of 1964 cage tests)	—	1:2

Submitted for inclusion in the 1965 proceedings of the 13th Northeastern Forest Tree Improvement Conference held in Albany, August 1965.

*Clear plastic sheeting used to cover pots to keep rain water out. Only measured amounts of water were given the trees.